

Notice of Allowability

Application No.

10/603,610

Examiner

Tung Vo

Applicant(s)

MCKENZIE ET AL.

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☐ This communication is responsive to ____.
2. ☒ The allowed claim(s) is/are 1-19.
3. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some* c) ☐ None of the:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

* Certified copies not received: ____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.

THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
- (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
- 1) ☐ hereto or 2) ☐ to Paper No./Mail Date ____.
- (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date ____.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☒ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3. ☒ Information Disclosure Statements (PTO/SB/08),
Paper No./Mail Date 03/11/2004
4. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material
5. ☐ Notice of Informal Patent Application
6. ☐ Interview Summary (PTO-413),
Paper No./Mail Date ____.
7. ☐ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☐ Other ____.

DETAILED ACTION

Allowable Subject Matter

1. Claims 1-19 are allowed.
2. The following is an examiner's statement of reasons for allowance:

Peset Llopis (US 7,085,321) teaches a method of controlling decoder drift for memory compression comprising the step of providing an encoded frame input to an encoder and a decoded frame output of a decoder in a first pass of a coding loop, where said decoded frame output is based on a truncation of an output of said encoder.

Monroe ((2004/0001214 A1) teaches apparatus for capturing, compressing and transmitting a visual image signal via a digital transmission system.

Neither Peset nor Monroe teaches a bandwidth-independent method for recording and transmitting video images, comprising the steps of: inputting a first analog video image from a camera device into a transmitter system; digitizing said first analog video image to a first bit map frame and dividing said first frame into a first plurality of individual blocks to define a reference frame; inputting a second analog video image from a camera device into a transmitter system; digitizing said second analog video image to a second bit map frame and dividing said second frame into a second plurality of individual blocks to define a current frame; performing a discrete cosine transform (DCT) to convert each of said first and second plurality of blocks from a time domain to a frequency domain, each block subsequent to said DCT being represented by a sum of sines and cosines preceded by a DC coefficient and a plurality of AC coefficients; truncating higher order AC coefficients within said plurality of AC coefficients to effect lossy compression

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of said sum; for each block, comparing the DC coefficient from the reference frame with the DC coefficient for a corresponding block in the current frame; for each block, comparing a first plurality of AC coefficients from said reference frame with a second plurality of for the corresponding block from said current AC coefficients frame; identifying any blocks within said plurality of blocks for which a difference between said DC coefficients exceeds a threshold value as a changed DC coefficient; identifying any blocks within said plurality of blocks for which a difference between at least one of said first and second pluralities of AC coefficients exceeds a threshold value as changed blocks; transmitting at least one of said changed DC coefficient and said changed blocks to a receiver or storage device as changes, unchanged blocks not being transmitted; and updating the reference frame with any changes as specified in claimed 1.

Neither Peset nor Monroe teaches a bandwidth-independent system for recording and transmitting video images comprising a transmitter unit on-board an aircraft and a remotely located, ground-based receiver unit, the transmitter unit including: a multi-function input/output converter and interface device for receiving an analog video image from a camera device on board the aircraft; a frame grabber for digitizing said analog video image to a bit map frame and dividing said frame into a plurality of individual blocks; a DCT engine coupled to said frame grabber for performing a discrete cosine transform (DCT) to convert each of said plurality of blocks from a time domain to a frequency domain, each block after said DCT being represented by a sum of sines and cosines preceded by a first plurality of coefficients; an on-board storage device coupled to said DCT engine for storing a reference frame; a system controller and compression engine coupled to said DCT engine for truncating higher order coefficients to effect lossy compression of said sum, said controller and compression engine including an algorithm

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for comparing a remainder of said first plurality of coefficients with a second plurality of coefficients from a corresponding block in said reference frame for each of said plurality of blocks, said algorithm identifying those blocks within said plurality of blocks for which a difference between at least one of said remaining first and second pluralities of coefficients exceeds a threshold value as changed blocks; a lossless compression device for compressing and transmitting said changed blocks to the receiver over a high latency transmission medium or to said on-board storage device, unchanged blocks not being transmitted; and said on-board storage device storing the reference frame updated with the changed blocks as specified in claim 11.

Neither Peset nor Monroe teaches a bandwidth-independent method for recording and transmitting video images from a transmitter system on-board an aircraft to a ground-based receiver system, comprising the steps of: inputting a first analog video image from a camera device into a transmitter system; digitizing said first analog video image to a first bit map frame and dividing said first frame into a first plurality of individual blocks to define a reference frame; inputting a second analog video image from a camera device into a transmitter system; digitizing said second analog video image to a second bit map frame and dividing said second frame into a second plurality of individual blocks to define a current frame; performing a discrete cosine transform (DCT) to convert each of said first and second plurality of blocks from a time domain to a frequency domain, such that each block is represented by a sum of sines and cosines preceded by a plurality of coefficients that includes a coefficient subset; comparing coefficients including said coefficient subset of said first plurality of blocks with corresponding coefficients of said second plurality of blocks, respectively; identifying those blocks having coefficient changes that exceed a threshold value; transmitting, in response to determining that said

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coefficient changes affect only coefficients in said coefficient subset, only said coefficient subset to at least one of an on-board storage device within said transmitter system and said ground-based receiver; marking those blocks having coefficient changes beyond any in said coefficient subset as changed blocks and transmitting said changed blocks to at least one of an on-board storage device within said transmitter system and said ground-based receiver, unchanged blocks not being transmitted; and updating the reference frame with received changes as specified in claim 16.

Neither Peset nor Monroe teaches a bandwidth-independent method for recording and transmitting video images using a transmitter system with a camera device on-board an aircraft to a ground-based receiver system, comprising the steps of: capturing a first image with said camera device and converting said first image from a time to frequency domain; capturing a second image with said camera device and converting said second image from the time to frequency domain; using said second image as the reference frame, differencing the first image against the second image and storing any differences therebetween as a reference update; capturing a third image with said camera device and converting said third image from the time to frequency domain; using said third image as the reference frame, differencing the second image against the third image and storing any differences therebetween as a reference update; and continuing to use a latest frame as the reference frame against which a next previous frame is differenced, until an alarm condition on said aircraft is detected; transmitting, in response to said alarm condition, stored images to said receiver system beginning with a most recent reference frame; continuing to input subsequent analog video images from the camera device into the transmitter system; digitizing said subsequent analog video images to bit map frames and

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dividing said frames into individual blocks; performing a discrete cosine transform (DCT) to convert each of said blocks from a time domain to a frequency domain; for each block, comparing coefficients thereof with coefficients of a corresponding block from a reference frame that is previous in time; identifying any blocks for which a difference between said coefficients exceeds a threshold value as a changed block; transmitting only said changed blocks to said receiver system, unchanged blocks not being transmitted as specified in claim 19.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Contact Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tung Vo whose telephone number is 571-272-7340. The examiner can normally be reached on Monday-Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mehrdad Dastouri can be reached on 571-272-7418. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



Tung Vo
Primary Examiner
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